



## Ethnic and Gender Differences in Additive Effects of Socio-economics, Psychiatric Disorders, and Subjective Religiosity on Suicidal Ideation among Blacks

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### ABSTRACT

**Background:** This study aimed to investigate the additive effects of socio-economic factors, number of psychiatric disorders, and religiosity on suicidal ideation among Blacks, based on the intersection of ethnicity and gender.

**Methods:** With a cross-sectional design, data came from the National Survey of American Life, 2001–2003, which included 3570 African-American and 1621 Caribbean Black adults. Socio-demographics, perceived religiosity, number of lifetime psychiatric disorders and lifetime suicidal ideation were measured. Logistic regressions were fitted specific to groups based on the intersection of gender and ethnicity, while socioeconomics, number of life time psychiatric disorders, and subjective religiosity were independent variables, and lifetime serious suicidal ideation was the dependent variable.

**Results:** Irrespective of ethnicity and gender, number of lifetime psychiatric disorders was a risk factor for lifetime suicidal ideation (odds ratio [OR] ranging from 2.4 for Caribbean Black women to 6.0 for Caribbean Black men). Only among African-American men (OR = 0.8, 95% confidence interval = 0.7–0.9), perceived religiosity had a residual protective effect against suicidal ideation above and beyond number of lifetime psychiatric disorders. The direction of the effect of education on suicidal ideating also varied based on the group.

**Conclusions:** Residual protective effect of subjective religiosity in the presence of psychiatric disorders on suicidal ideation among Blacks depends on ethnicity and gender. African-American men with multiple psychiatric disorders and low religiosity are at very high risk for suicidal ideation.

**Keywords:** African-Americans, ethnic groups, gender, psychiatric disorder, religion and psychology, suicide

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### INTRODUCTION

Demographic and socio-economic factors,<sup>[1-3]</sup> psychiatric disorders,<sup>[4-7]</sup> and low religiosity<sup>[8-12]</sup> all have separate effects on suicidal ideation and behaviors. Low socio-economic status indicated by poverty, low education level, single status, and unemployment increases the risk of suicide.<sup>[1-3]</sup> The presence of psychiatric disorders also

increases the risk of suicidal ideation and behaviors.<sup>[4-7]</sup> Individuals with low religious involvement are also at high risk for suicide.<sup>[8-12]</sup>

Suicidal ideation and behaviors vary across ethnic groups.<sup>[13-16]</sup> Braun *et al.* argued that suicide variation among ethnic groups may have roots in multiple factors such as culture, life values, and socio-historical experiences.<sup>[17]</sup> Although racial and ethnic difference in the epidemiology of suicide is known,<sup>[18]</sup> less is known about ethnic differences in the effects of risk and protective factors on suicide.<sup>[19,20]</sup> Thus, there is a need to study racial and ethnic variations in vulnerability and resilience to the effect of risk and protective factors such as socio-economics, psychiatric disorders, and religiosity.

Possibly because of lower rates of suicide compared to Whites, few studies have focused on risk and protective factors of suicidality among Blacks.<sup>[21,22]</sup> Among Blacks in the United States, number of lifetime psychiatric disorders lowers the age of suicidal ideation while subjective religiosity delays the initiation of suicidal thoughts. Interestingly, the effect of psychiatric disorders on the age of onset of suicidal ideation is dose dependent, and the effect of multiple psychiatric disorders on suicidal ideation is most pronounced among those with low religiosity.<sup>[23]</sup> Among Blacks, low education, residing in the Midwest, and having one or more psychiatric disorders contribute to increase in risk of suicidal attempts.<sup>[24]</sup>

Among Blacks, ethnicity changes the distribution of suicidal behaviors, as African-Americans may attempt suicide more than Caribbean Blacks.<sup>[25]</sup> In 2011, Taylor *et al.* studied differences in the association between certain measures of religiosity and suicidality among African-Americans versus Caribbean Blacks. For instance, among Caribbean Blacks, subjective religiosity, looking to God for strength, and comfort and guidance were protective against suicidal attempts and ideation. These associations could not be found among African-Americans.<sup>[18]</sup>

This study aimed to investigate if the additive effects of socio-economic factors, number of psychiatric disorders, and subjective religiosity on lifetime serious suicidal ideation among Blacks vary based on the intersection of ethnicity and gender.

## METHODS

### Study design and participants

Data came from the National Survey of American Life (NSAL), which was conducted as a part of the Collaborative Psychiatric Epidemiology Surveys, 2003. The NSAL included 3570 African-American and 1621

Caribbean Black adults. The study was funded by National Institute of Mental Health.

African-Americans were composed of individuals that self-identified as Black, but did not report Caribbean ancestry. Individuals that self-identified as Black were considered Caribbean Blacks, if they met at least one of the following criteria: (a) Being of West Indian or Caribbean descent, (b) being from a Caribbean country, or (c) having parents or grandparents that were born in a Caribbean country.<sup>[26]</sup>

African-American samples, being the largest portion of NSAL, were selected from 48 neighboring states and included households that contained at least one Black adult. The Caribbean Black sample included 265 samples that were collected from households within the core sample. The remaining samples were collected from households within geographic areas that had a high Caribbean population.<sup>[27]</sup> Caribbean Blacks were sampled from residential areas that reflect the distribution of the African-American population and from additional metropolitan areas where Caribbean Blacks composed more than 10% of the population.<sup>[26]</sup>

### Study instruments and variables assessment

Age, education level (less than high school, high school graduate, some college, college graduate), marital status (married, previously married, never married), and region (Northeast, Midwest, South, and West Census regions) were measured as controls. Ethnicity (African-American and Caribbean Black) and gender were moderators.

### Subjective religiosity

Subjective religiosity is one of the dimensions of religious involvement and is defined as the subjective perception of and attitude toward religion.<sup>[28]</sup> It can be measured by questions regarding the perceived importance of religion, the role of religious beliefs in one's life, and one's perception of being religious.<sup>[29]</sup> This dimension is nonbehavioral, as opposed to organizational and nonorganizational religiosity.<sup>[30,31]</sup> Measures of subjective religiosity have been validated using structural equation modeling procedures among Blacks.<sup>[30]</sup>

In this study, subjective religiosity was measured using two items: (1) How religious are you? and (2) How spiritual are you? Responses to the first question included: Not religious at all, not too religious, fairly religious, and very religious. Responses to the second question included: Not spiritual at all, not too spiritual, fairly spiritual, and very spiritual. The total score varied from 0 to 6 with a higher score indicating higher subjective religiosity.

### Psychiatric disorders

World Mental Health Composite International Diagnostic Interview was used to measure number of

lifetime psychiatric disorders based on the Diagnostic and Statistical Manual of Mental Disorders (DSM), Fourth Edition. Psychiatric disorders were classified as: Mood disorders (i.e., major depressive disorder, dysthymia, bipolar I and II disorders); anxiety disorders (i.e., panic disorder, agoraphobia, social phobia, generalized anxiety disorder, obsessive-compulsive disorder, posttraumatic stress disorder); substance use disorders (i.e. alcohol abuse, alcohol dependence, drug abuse, drug dependence); disorders usually diagnosed in childhood (i.e. separation anxiety disorder, oppositional defiant disorder, conduct disorder, attention deficit/hyperactivity disorder), and eating disorders (i.e., anorexia nervosa, bulimia nervosa, binge-eating disorder).<sup>[26]</sup>

### Main outcome

Lifetime serious suicidal ideation was measured using the following single item: Have you ever seriously thought about suicide? Other questions related to suicide were also asked but were not included in this analysis.<sup>[18-20,24,25]</sup>

### Statistical analysis

To handle the complex sampling design of the NSAL, Stata 12.0 (StataCorp, TX, USA) was used for data analysis. We estimated standard errors based on the Taylor series linearization to account for the clustered nature of the data. Subpopulation survey logistic regression was used for all inferences. Multicollinearity between the independent variables was ruled out.<sup>[32]</sup> Odds ratios (OR) with 95% confidence intervals (CIs) were reported. ORs larger than one indicated a positive association between exposure and outcome.  $P < 0.05$  were considered significant. Missing data were not imputed.

## RESULTS

Among Blacks, about 44.4% of the participants were male with a mean age of 42.2 (SE = 0.49) years. From all Blacks, 69.3% (95% CI = 67.2–71.3) did not meet criteria for any lifetime psychiatric disorders, 21.8% (95% CI = 20.2–23.4) met criteria for one psychiatric disorder and 8.9% (95% CI = 7.6–10.1) met criteria for at least two psychiatric disorders. 11.7% (95% CI = 10.1–13.4) of all participants had seriously thought about suicide since the mean age of 28.5 years (95% CI = 27.3–29.7).

Among African-American men, perceived religiosity and number of psychiatric disorders were associated with lifetime suicidal ideation. In this group, age, education, and country region were not associated with suicidal ideation [Table 1].

Among African-American women, age, education, and number of psychiatric disorders were associated with lifetime suicidal ideation. In this group, perceived religiosity and country region were not associated with lifetime suicidal ideation [Table 2].

Among Caribbean Black men, education, and number of psychiatric disorders were associated with lifetime suicidal ideation. In this group, age, perceived religiosity, and country region were not associated with lifetime suicidal ideation [Table 3].

Among Caribbean Black women, age, education, and number of psychiatric disorders were associated with lifetime suicidal ideation. In this group, perceived religiosity and country region were not associated with lifetime suicidal ideation [Table 4].

## DISCUSSION

Our study showed that after adjustment for the effect of socio-economic status and number of lifetime psychiatric disorders, subjective religiosity protected African-American men against serious suicidal thoughts. Such an effect was not found among Caribbean Black men or women or African-American women.

After controlling the effect of type of psychiatric disorders, Taylor *et al.* (2011) showed major differences between African-Americans and Caribbean Blacks for the association between various domains of religiosity and suicidal behaviors. Their study showed that some indicators of religiosity were negatively associated with suicidal ideation and attempt; however, there were also positive associations between some aspects of religiosity and suicidality among Caribbean Blacks. Authors argued that there is a need for further qualitative and quantitative research to understand reasons for the differences in these associations across ethnic groups.<sup>[31]</sup>

In another study, African-Americans and Caribbean Blacks were shown to be very different in additive effects of five psychiatric disorders on suicidal ideation. Among African-Americans, major depressive disorder, posttraumatic stress disorder and alcohol abuse disorder were associated with higher odds of suicidal thoughts, while among Caribbean Blacks, major depressive disorder and drug abuse disorder were associated with higher odds of suicidal ideation.<sup>[33]</sup>

Based on the current study and also previous studies,<sup>[18-20,34]</sup> the additive effects of risk and protective factors of suicidality of Blacks depend on their ethnicity. Our study showed that religiosity is a protective factor with differential effects that depend on the intersection of ethnicity and gender. Although multiple psychiatric disorders are always a risk factor, different types of psychiatric disorders may contribute to the suicide of African-Americans and Caribbean Blacks. This finding is beyond the previous knowledge on the main effects of ethnicity on suicidal ideation among Blacks.<sup>[25]</sup>

Findings of the current study shed more light on the complex link between race and ethnicity, gender,

**Table 1: Association between socio-economic status, number of psychiatric disorders, perceived religiosity, and suicidal ideation among African-American men**

	OR	SE	t	P	95% CI for OR	
Age	1.006	0.008	0.710	0.484	0.989	1.023
Education level <sup>a</sup>						
12 years	1.547	0.591	1.140	0.261	0.712	3.361
13-15 years	0.900	0.408	-0.230	0.817	0.358	2.260
More than 15 years	2.075	0.897	1.690	0.101	0.862	4.994
Region <sup>b</sup>						
Midwest	0.825	0.243	-0.650	0.519	0.454	1.501
South	0.777	0.223	-0.880	0.387	0.434	1.394
West	1.536	1.023	0.650	0.523	0.397	5.943
Perceived religiosity <sup>c</sup>	0.846	0.067	-2.120	0.041	0.720	0.993
Number of psychiatric disorders	2.601	0.419	5.930	<0.001	1.875	3.610
Intercept	0.073	0.059	-3.250	0.003	0.014	0.376

<sup>a</sup>Reference group=Education <12 years, <sup>b</sup>Reference group=Northeast, <sup>c</sup>Reference group=Low. SE=Standard error, CI=Confidence interval, OR=Odds ratio

**Table 2: Association between socio-economic status, number of psychiatric disorders, perceived religiosity, and suicidal ideation among African-American women**

	OR	SE	t	P	95% CI for OR	
Age	0.988	0.005	-2.460	0.019	0.979	0.998
Education level <sup>a</sup>						
12 years	0.826	0.154	-1.020	0.313	0.565	1.207
13-15 years	0.713	0.165	-1.460	0.155	0.445	1.143
More than 15 years	0.383	0.114	-3.230	0.003	0.209	0.701
Region <sup>b</sup>						
Midwest	0.876	0.297	-0.390	0.698	0.440	1.743
South	0.689	0.212	-1.210	0.234	0.369	1.287
West	0.500	0.176	-1.970	0.057	0.245	1.022
Perceived religiosity <sup>c</sup>	0.960	0.050	-0.790	0.435	0.863	1.067
Number of psychiatric disorders	2.542	0.251	9.440	<0.001	2.080	3.107
Intercept	0.264	0.125	-2.810	0.008	0.101	0.692

<sup>a</sup>Reference group=Education <12 years, <sup>b</sup>Reference group=Northeast, <sup>c</sup>Reference group=Low. SE=Standard error, CI=Confidence interval, OR=Odds ratio

**Table 3: Association between socio-economic status, number of psychiatric disorders, perceived religiosity, and suicidal ideation among Caribbean Black men**

	OR	SE	t	P	95% CI for OR	
Age	1.006	0.018	0.370	0.717	0.970	1.044
Education level <sup>a</sup>						
12 years	0.386	0.204	-1.800	0.085	0.129	1.153
13-15 years	0.610	0.210	-1.440	0.164	0.300	1.242
More than 15 years	0.131	0.103	-2.590	0.016	0.026	0.665
Region <sup>b</sup>						
Midwest	1.000					
South	1.818	1.294	0.840	0.410	0.417	7.925
West	1.199	0.885	0.250	0.808	0.260	5.519
Perceived religiosity <sup>c</sup>	0.899	0.271	-0.350	0.727	0.482	1.676
Number of psychiatric disorders	6.054	2.762	3.950	0.001	2.356	15.555
Intercept	0.038	0.030	-4.130	<0.001	0.008	0.197

<sup>a</sup>Reference group=Education <12 years, <sup>b</sup>Reference group=Northeast, <sup>c</sup>Reference group=Low. SE=Standard error, CI=Confidence interval, OR=Odds ratio

**Table 4: Association between socio-economic status, number of psychiatric disorders, perceived religiosity, and suicidal ideation among Caribbean Black women**

	OR	SE	t	P	95% CI for OR	
Age	0.952	0.017	-2.700	0.013	0.917	0.989
Education level <sup>a</sup>						
12 years	3.705	1.888	2.570	0.017	1.291	10.631
13-15 years	2.223	1.336	1.330	0.197	0.641	7.710
More than 15 years	5.063	2.439	3.370	0.003	1.869	13.712
Region <sup>b</sup>						
Midwest	6.471	7.695	1.570	0.130	0.553	75.740
South	0.788	0.564	-0.330	0.742	0.180	3.460
West	1.885	1.331	0.900	0.379	0.437	8.127
Perceived religiosity <sup>c</sup>	0.934	0.127	-0.500	0.622	0.704	1.239
Number of psychiatric disorders	2.408	0.653	3.240	0.004	1.374	4.221
Intercept	0.164	0.185	-1.600	0.124	0.016	1.705

<sup>a</sup>Reference group=Education <12 years, <sup>b</sup>Reference group=Northeast, <sup>c</sup>Reference group=Low. SE=Standard error, CI=Confidence interval, OR=Odds ratio

socio-economic status, psychiatric disorders, religiosity, and suicidal behaviors. Assari had previously shown that the effect of psychiatric disorders among Blacks may be more pronounced among those who report low subjective religiosity. Based on that study, number of psychiatric disorders has a dose-dependent effect on suicidal ideation, with the highest number of comorbid psychiatric disorders having a very strong cumulative effect on suicidal ideation.<sup>[23]</sup>

Among Blacks, the effect of psychiatric disorders on the age of suicidal ideation may be a dose-response relation.<sup>[23]</sup> Other studies have also confirmed the dose-response in the effect of number of psychiatric disorders and suicidal behaviors.<sup>[35-37]</sup> In a study by Kessler *et al.*, number of psychiatric disorders was the strongest predictor of suicidal attempt in the population.<sup>[38]</sup> According to our study, the effect of each additional psychiatric disorder on suicidal ideation is highest for Caribbean Black men (OR = 6.0) and lowest for Caribbean Black women (OR = 2.4).

Although not all,<sup>[39]</sup> most studies<sup>[23,40-42]</sup> have shown a higher prevalence of suicidal ideation among women.<sup>[23]</sup> Gender differences in suicidal thought have been partially attributed to social norms and gender expectations.<sup>[43]</sup> Compared to men, women report more suicidal thoughts but do not act on thoughts (low suicidal attempt).<sup>[44]</sup> Most studies, however, have focused on the main effects of gender on suicidality,<sup>[45-47]</sup> and our knowledge is very limited on the moderating effect of intersection of gender and ethnicity on factors that contribute to suicide.<sup>[48]</sup>

Gender differences in suicidality have not been explained by differential exposure to the risk factors.<sup>[49]</sup> To test the differential vulnerability hypothesis based on gender, a Danish study compared 811 suicide cases with 79,871 controls and showed that unemployment, retirement, being single and sickness absence from work were risk

factors for men, while having a young child was protective for women. History of hospitalization due to psychiatric disorder was the most strong suicide risk factor among both genders. The magnitude of the association between suicide and psychiatric admission status also differed between genders.<sup>[49]</sup>

Based on our results, programs on screening, diagnosis, prevention or treatment of suicidal ideation among Blacks may benefit from tailoring based on ethnicity and gender.<sup>[50]</sup> Although screening and treatment of psychiatric disorders among Blacks seem crucial across all gender and ethnic groups, African-American men may need additional evaluation if less religious. Suicidal prevention programs may need to reach African-American men with multiple psychiatric disorders and low religiosity. Universal diagnosis and treatment of psychiatric disorders is, however, essential for all gender and ethnic groups of Blacks.

In this study, groups based on the intersection of ethnicity and gender were very different in additive effects of known determinants of suicidal ideation. The moderating effect of race, ethnicity, gender, social class, and other contextual factors on the associations between risk and protective factors and outcomes has been shown for other risk factors and outcomes.<sup>[51-62]</sup> We, however, still do not know how contextual factors such as gender and ethnicity modify the additive effects of a risk and protective factor, even when separate effects of the same risk and protective factors are constant.<sup>[34,51,52,57,58,63-65]</sup>

This study had a few limitations. Due to the cross-sectional design, causative associations are not plausible. In addition, as this study relied on self-reports, under-reporting of suicidal ideation cannot be ruled out. Moreover, ethnic and gender differences in the validity of the measures of suicidality and religiosity are not known. In addition, statistical power was not identical



in different groups of this study. Furthermore, we also did not include any measure of behavioral religiosity. Finally, Caribbean Blacks in this study were composed of a heterogenic group based on nativity and time lived in the USA.

## CONCLUSIONS

Based on our findings, while the effect of number of psychiatric disorders is constant across ethnic and gender groups of Blacks, subjective religiosity may only protect African-American men against suicidal ideation. Subjective religiosity may not have a protective effect above and beyond number of psychiatric disorders among African-American women, or Caribbean Black men or women. The direction of the association between education level and suicidal ideation also vary based on the intersection of ethnicity and gender.

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